AN AUTUMN SURVEY OF THE VASCULAR FLORA, BIRDS, FUNGI, MYXOMYCETES AND LICHENS OF BALADJIE LAKE NATURE RESERVE AND BALADJIE ROCK

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ABSTRACT

In April 2009 the Western Australian Naturalists' Club conducted a biological survey at the Baladjie Lake Nature Reserve and at Baladjie Rock, on the western edge of the Great Western Woodlands near the town of Bullfinch. 97 specimens of lichens (including *Parmeliopsis macrospora*, a Listed Priority 3 species), 15 fungi, 13 vascular flora and six myxomycetes (slime moulds) were collected in this survey and deposited in the Western Australian Herbarium. Twenty-five species of birds were also recorded in the area. An updated inventory of all flora comprising 170 species and lichen records (including those made in the current survey) was compiled for the Baladjie area from herbarium records.

INTRODUCTION

The 2009 Easter Excursion of the Western Australian Naturalists' Club (WANATS) involved 23 club members who camped near Baladjie Rock in the Shire of Yilgarn for seven days (April 8–14). The purpose of the excursion was to conduct a survey of the vascular flora, fungi, lichens and birds at the request of the then Department of Environment and Conservation (DEC).

The Baladjie Lakes Nature Reserve (C42720) encompasses about 8,916.34ha adjacent to the Baladjie Rock Water Reserve and is located about 16km north-west of the small town of Bullfinch in the Shire of Westonia. It straddles the border between the Avon Wheatbelt and Coolgardie IBRA Bioregions and is thus part of the Great Western Woodlands which form the largest area of temperate climate woodlands in the world. The Great Western Woodlands (about 160,000 km^2) are also remarkable on a global scale due to their high biodiversity and largely pristine vegetation and because woodland formations elsewhere do not inhabit areas with such dry climates and nutrient poor soils.

The Baladjie Lakes and Baladjie Rock are located within the Yilgarn Block, a stable Archaean Craton that consists of belts of banded gneiss, ironstone and layered sedimentary, volcanic and intrusive rocks (Chin and Smith 1983). The gently undulating landscape of this area comprises lateritic, duricrusted uplands and sandplains (at an elevation of about 400m) dissected by broad paleodrainage channels (now chains of shallow salt lakes). In places where the landscape above has eroded away to a lower plain, there are often residual monadnocks such as Elachbutting Hill (elevation 407m) and Baladjie Rock (elevation 377m) that are emergent from this plain.

Prior to this excursion, the local flora was known from only 93 vascular plant collections in the Western Australian Herbarium (1998–). The Department of Environment and Conservation has also previously compiled a list of 97 taxa for the reserve (Ben Lullfitz, pers. comm.) but there were no fine scale vegetation maps available for the area.

METHODS

To sample the vascular flora, three permanent 30m x 30m quadrats (Table 1; Figure 1) were set out in eucalypt woodland using the system of Keighery (1994). Galvanised fence droppers were placed at the four corners of each quadrat. A marker peg was also placed on a nearby track to assist in the relocation of the quadrats. Each quadrat was photographed from the north east corner. All taxa of trees, shrubs, herbs, grasses, sedges, and lichens in the quadrats were recorded and identified. Additional opportunistic collections and records of vascular plants, fungi and lichens were also made outside the quadrats.

Fungal fruiting bodies were collected opportunistically and placed in paper bags. The substrates and vegetation associated with these locations were noted. In the laboratory, the collections were identified by Elaine Davison using standard keys (Cunningham 1979, Grgurinovic 1997). Spores and capillitium were mounted in lactophenol cotton blue and examined at x 1000 magnification. All collections have been deposited in PERTH.

Myxomycetes were grown in moist chambers (Stephenson and Stempen 1994) on bark from *Acacia* sp. narrow phyllode (B.R. Maslin 7831), *Eucalyptus petraea*, collected close to the quadrats. The chambers were observed at frequent intervals and any myxomycetes that developed were mounted on slides and identified using standard keys

Table 1. Location of flora sampling quadrats at Baladjie Nature Reserve

Quadrat	Location
BR1	30° 57' 07.0"S, 118° 52' 31.1"E
BR2	30° 56' 57.7"S, 118° 52' 50.7"E
BR3	30° 52' 51.8"S, 118° 55' 08.3"E

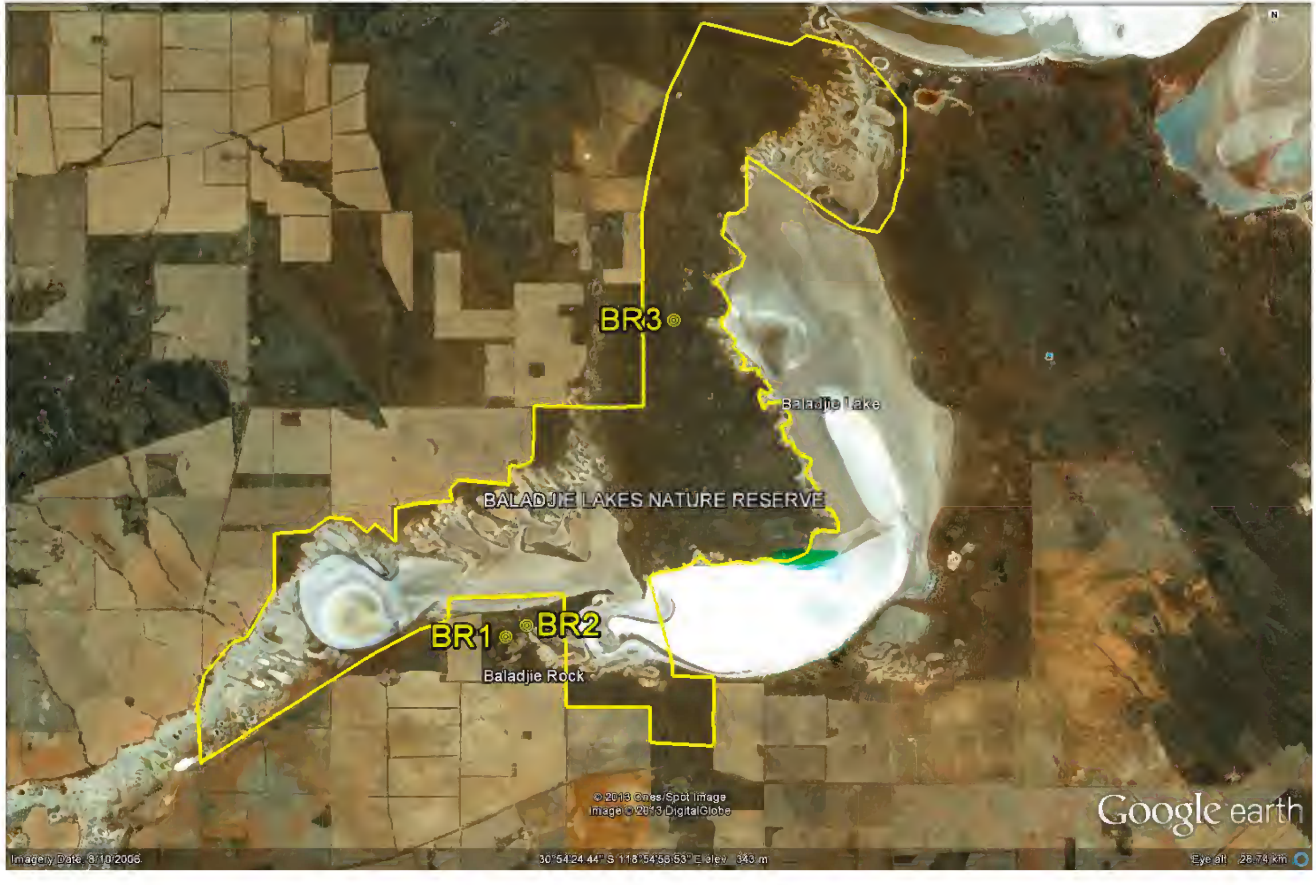

Figure 1. Quadrat locations at Baladjie Lake Nature Reserve and Baladjie Rock.

(Mitchell 2003, Neubert *et al.* 2000). All collections have been deposited in PERTH.

Updated inventories of all vascular flora and lichens known from Baladjie Lakes Nature Reserve and Baladjie Rock were compiled from records of specimens held at PERTH (WA Herbarium 1998–) and records from this survey. It is unknown if there have been previous fungi and slime mould (myxomycete) collections in the area as records for these groups are not readily available from WA Herbarium (1998).

A list of birds that were sighted or heard by all members of the excursion was compiled during the survey. This included all birds identified near the three flora sampling quadrats at specific times during the flora survey (Table 2).

RESULTS

1. Vascular Flora and Vegetation

The current survey found samphires and shrublands adjacent to the Baladjie Lakes, and mallee and woodlands further from the lakes. The mallee *Eucalyptus petraea* (Granite Rock Box) formed stands near the base of Baladjie Rock and *Eucalyptus loxophleba* subsp. *lissophloia* (the smooth bark form of the York Gum) was also nearby. *Eucalyptus kochii* subsp. *plenissima* (Trayning Mallee) grew further away from the rock towards the salt lakes. *Eucalyptus salmonophloia* (Salmon Gum) and *Eucalyptus salubris* (Gimlet) were the larger trees of the area.

The understorey layers of the mallee and woodlands were dominated by *Acacia* spp., including *Acacia* sp. narrow phyllode (B.R. Maslin 7831) (the Northern Jam Wattle) and *Acacia tetragonophylla* (Kurarra). Also common were *Bursaria occidentalis*, *Eremophila clarkei* (Turpentine Bush), *Eremophila drummondii*, *Eremophila ionantha* (Violet-flowered Eremophila), *Eremophila scoparia* (Broom Bush), *Leptospermum fastigiatum*, *Leptospermum macgillivrayi*, *Olearia dampieri* subsp. *eremicola*, *Olearia pimeleoides* (Pimelea Daisybush), *Olearia muelleri* (Goldfields Daisy) and *Pittosporum angustifolium*.

All of the vegetation was generally in very good or excellent condition with little disturbance except occasional signs of rabbit activity.

Forty-six specimens of vascular flora were recorded in this survey, identified by the author and Gilbert Marsh and 13 specimens were deposited in PERTH (WA Herbarium 1998–). The taxa identified in the field and deposited in the herbarium

Table 2. Bird observation locations/ times at or near flora quadrats

Nearest quadrat	Date and time of records
BR1	April 11, 10:30am to 11:15am
BR2	April 11, 3:00pm to 3:45pm
BR3	April 12, 10:00am to 10:45am

are listed with previous herbarium records from this location in Appendix 1.

The vegetation sampled in the quadrats of the current survey is briefly described below in terms of the dominant (greater than 2 % cover) taxa in each layer.

BR-1: Mid-dense *Eucalyptus loxophleba* subsp. *lissophloia* mallee (40% cover); over *Calycopeplus paucifolius* tall, open shrubs (>2m, 5% cover); *Acacia* sp. narrow phyllode (B.R. Maslin 7831) and other low, open shrubs; and sparse annual grasses. Common associates of this vegetation are listed below.

Shrubs <2m: *Acacia tetragonophylla, Eremophila decipiens, Eremophila drummondii, Leptospermum fastigiatum, Olearia dampieri* subsp. *eremicola, Olearia muelleri, Olearia pimeleoides, Rhagodia drummondii, Santalum acuminatum* and *Solanum nummularium.*

Grasses: *Aristida contorta, Austrostipa trichophylla.*

Perennial herbs: *Dianella revoluta.*

Annual herbs: *Waitzia acuminata* var. *acuminata* (dead).

Hemi-parasite: *Amyema miquelii* (on *Eucalyptus loxophleba* subsp. *lissophloia*).

This quadrat was at the base of Baladjie Rock to the north of the camping area. It was a poorly drained flat with orange, granitic, gravelly soil and 50% bare ground. *Leptospermum fastigiatum* formed dense thickets closer to Baladjie Rock.

BR-2: Open *Eucalyptus kochii* subsp. *plenissima* mallee (25% cover) over *Exocarpos aphyllus-Dodonaea viscosa* subsp. *angustissima* tall, open shrubs (>2m, 10% cover); over low open *Senna artemisioides* subsp. *filifolia* shrubs (<2m, 5% cover); and other low open shrubs including *Olearia muelleri* and *Rhagodia drummondii* (<1m); and sparse *Austrostipa elegantissima* perennial grass (5 % cover).

Associates of this vegetation are listed below.

Shrubs <2m: *Acacia* sp. narrow phyllode (B.R. Maslin 7831) *Atriplex nummularia, Callitris columellaris, Eremophila oppositifolia, Maireana diffusa, Maireana georgei, Olearia muelleri, Ptilotus nobilis* subsp. *nobilis, Ptilotus obovatus* and *Solanum hoplopetalum*

Perennial herbs: *Thysanotus manglesianus* (dead).

Annual herbs: *Podolepis capillaris* (dead).

Hemi-parasite: *Amyema miquelii* on (*Eucalyptus kochii* subsp. *plenissima*).

This quadrat was at the north end of Baladjie Rock (close to a small lobe of the salt lake) on orange sand with a 50% litter cover.

BR-3: *Eucalyptus salubris* low open woodland of (<10m, 10% cover); over tall *Eremophila scoparia* and *Acacia* sp. narrow phyllode (B.R. Maslin 7831) shrubs (>2m, 15% cover); over *Atriplex nummularia* low open shrubs (<2m, 5% cover).

Associates of this vegetation are listed below.

Shrubs <2m: *Eremophila clarkei, Eremophila ionantha, Eremophila oppositifolia, Eremophila scoparia, Exocarpos aphyllus, Scaevola spinescens, Senna artemisioides* subsp. *filifolia* and *Senna chatelainiana*

Shrubs <0.5m: ?*Dissocarpus paradoxus, Maireana* sp., *Ptilotus nobilis* subsp. *nobilis* and *Ptilotus obovatus*

Grasses: *Austrostipa pycnostachya*

This quadrat was approximately 11.5 km NNE of Baladjie Rock just west of the track running up to the Mt Jackson Road alongside Lake Baladjie. The soil was poorly-drained, lichen-covered, orange clay-sand, with about 5% litter cover.

2. Lichens

Ninety-seven lichen specimens (from 13 families and at least 21 genera and 36 species) were collected (Appendix 2). These collections were identified by Ray Cranfield of DPaW (Manjimup) and all specimens were deposited in PERTH.

3. Fungi and Myxomycetes (Slime Moulds)

Thirteen collections of fungi (from five families, six genera and at 11 species) were made (Appendix 3). All were taxa with persistent fruiting bodies. Nine (*Geastrum* spp., *Podaxis pistillaris, Pisolithus* sp., *Tulostoma* spp.) were puffballs or puffball-like species and occurred on the ground. The other two, *Pycnoporus coccineus* and *Gloeophyllum* sp., were brackets growing on dead wood.

In addition to these macrofungi, bark incubated in moist chambers yielded six species of Myxomycetes (Appendix 4). These include *Arcyria pausiaca*, an uncommon species worldwide, which has been found several times on bark from arid and semi-arid areas in Australia (Davison and Davison, unpublished).

These groups were identified by Elaine Davison (Curtin University) and all collections were deposited in PERTH.

4. Avifauna

Twenty-five bird species were noted in the general Baladjie Rock/ Baladjie Lakes Nature Reserve area and adjacent to the three flora sampling quadrats (Appendix 5).

DISCUSSION

The flora survey was conducted at a low intensity during dry, autumn weather. However, although there were no vascular flora taxa of listed conservation significance found in this survey, 31 taxa not previously known from the area (WA Herbarium, 1998–) were collected in this survey. It is recommended that additional flora surveys are carried out in spring at Baladjie to survey the annuals and geophytes. The playa vegetation also appears to be worth further investigation as a Priority 1 species (*Tecticornia flabelliformis)*

is known from the area (WA Herbarium, 1998–). Classifying and mapping the fine-scale vegetation assemblages in the area could also provide useful information for the management of the area.

The low number of birds recorded in this survey probably also reflected the warm to hot, dry weather conditions at the time of survey and the low intensity of the survey.

The lichen collections made in this survey were the first lichens recorded at Baladjie since 1971, when Prof. A. R Main (1919–2009), a long-term member and a patron of the Western Australian Naturalists' Club, collected three taxa at Baladjie Rock and lodged them in the WA Herbarium collection. None of the taxa collected by Prof. Main were re-collected in the current survey. One lichen species (*Parmeliopsis macrospora*) that was collected in the current survey is listed as a Priority 3 taxon by DPaW (Western Australian Herbarium 1998–). Seven of the species collected in the current survey (including *Parmeliopsis macrospora*) were first records for the Coolgardie and Avon Wheatbelt IBRA Bioregions.

The fungi and slime moulds collected in this survey appear to be the first collections of these groups from Baladjie Lakes Nature Reserve and Baladjie Rock. to be deposited at the WA Herbarium. The macrofungi that occur in arid areas of Australia are not well known. Some species that were collected in this survey (e.g. *Podaxis pistillaris*) are conspicuous and widespread (Grey and Grey 2001), but the small stalked puffballs (*Tulostoma* spp.) and earthstars (*Geastrum* spp.) are easily overlooked. These latter genera contain many species that can only be separated by microscopic examination. The species found at Baladjie Lake Nature Reserve and Baladjie Rock are similar to those from arid areas in other parts of Western Australia and in the Northern Territory (Davison, unpublished).

The fungi that occur in arid areas fill the same ecological niches as those that occur in more mesic environments. Some, such as *Pisolithus* are mycorrhyzal with shrubs and trees. Decomposers, such as *Pycnoporus coccineus* and *Gloeophyllum* are important for recycling cellulose and lignin. It is only when weather conditions are suitable that they produce macroscopic fruiting bodies, and this is less frequent at Baladjie than in higher rainfall areas.

From this survey, lichens and fungi appear to be significant components of the biodiversity at Baladjie. Further surveys of these poorly known groups in other areas of the Great Western Woodlands may contribute insights into the ecology of this poorly known area.

ACKNOWLEDGEMENTS

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Appendix 1. The vascular flora recorded at Baladjie Lakes Nature Reserve and Baladjie Rock in April 2009 and all WA Herbarium (1998–) records from these locations.

FAMILY	TAXON	FloraBase prior records	BR1	BR2	BR3	Opportunistic record, this survey
Aizoaceae	*Gunniopsis intermedia* Diels	*				
Aizoaceae	*Gunniopsis quadrifida (F.Muell.) Pax*	*				
Amaranthaceae	*Ptilotus nobilis* (Lindl.) F.Muell. subsp. *nobilis*	*		*	*	
Amaranthaceae	*Ptilotus obovatus* (Gaudich.) F.Muell.	*		*	*	
Asparagaceae	*Chamaexeros fimbriata* (F.Muell.) Benth.	*				
Asparagaceae	*Thysanotus manglesianus* Kunth	*		*		
Asteraceae	*Angianthus* aff. *micropodioides*	*				
Asteraceae	*Angianthus prostratus* P.S.Short	*				
Asteraceae	*Angianthus tomentosus* J.C.Wendl.	*				
Asteraceae	*Erymophyllum ramosum* (A. Gray) Paul G. Wilson subsp. *ramosum*	*				
Asteraceae	*Cephalipterum drummondii* A.Gray	*				
Asteraceae	*Cratystylis subspinescens* S.Moore	*				
Asteraceae	*Gilberta tenuifolia* Turcz.	*				
Asteraceae	*Gnephosis acicularis* Benth.	*				
Asteraceae	*Goodenia quasilibera* Carolin	*				
Asteraceae	*Gnephosis tenuissima* Cass.	*				
Asteraceae	*Olearia dampieri* subsp. *eremicola* (Diels) Lander ms		*			
Asteraceae	*Olearia muelleri* (Sond.) Benth.	*	*	*		
Asteraceae	*Olearia pimeleoides* (DC.) Benth.	*	*			
Asteraceae	*Podolepis capillaris* (Steetz) Diels	*		*		
Asteraceae	*Podotheca pritzelii* P.S.Short P3	*				
Asteraceae	*Senecio pinnatifolius* A.Rich.	*				
Asteraceae	*Waitzia acuminata* Steetz var. *acuminata*		*			
Brassicaceae	*Stenopetalum salicola* Keighery	*				
Campanulaceae	*Isotoma petraea* F.Muell.	*				
Campanulaceae	*Lobelia winfridae* Diels	*				
Centrolepidaceae	*Centrolepis cephaloformis* Reader subsp. *cephaloformis*	*				
Centrolepidaceae	*Centrolepis eremica* D.A.Cooke	*				
Centrolepidaceae	*Centrolepis polygyna* (R.Br.) Hieron.	*				
Chenopodiaceae	*Atriplex nana* Parr-Smith	*				
Chenopodiaceae	*Atriplex nummularia* Aellen subsp. *spathulata* Aellen	*			*	

FAMILY	TAXON	FloraBase prior records	BR1	BR2	BR3	Opportunistic record, this survey
Chenopodiaceae	*Atriplex stipitata* Benth.	*				
Chenopodiaceae	*Atriplex nummularia* Lindl.			*	*	
Chenopodiaceae	? *Dissocarpus paradoxus* (R.Br.) Ulbr.				*	
Chenopodiaceae	*Enchylaena tomentosa* R.Br. var. *tomentosa*	*				
Chenopodiaceae	*Maireana amoena* (Diels) Paul G.Wilson	*				
Chenopodiaceae	*Maireana diffusa* Paul G.Wilson			*		
Chenopodiaceae	*Maireana georgei* (Diels) Paul G.Wilson			*		
Chenopodiaceae	*Maireana* sp.				*	
Chenopodiaceae	*Maireana thesioides* (C.A.Gardner) Paul G.Wilson	*				
Chenopodiaceae	*Rhagodia drummondii* Moq.		*	*		
Chenopodiaceae	*Rhagodia preissii* Moq. subsp. *preissii*	*				
Chenopodiaceae	*Roycea* ?*divaricata* Paul G.Wilson	*				
Chenopodiaceae	*Sarcocornia blackiana* (Ulbr.) A.J.Scott	*				
Chenopodiaceae	*Sclerolaena diacantha* (Nees) Benth.	*				
Chenopodiaceae	*Sclerolaena eurotioides* (F.Muell.) A.J.Scott	*				
Chenopodiaceae	*Sclerolaena fusiformis* Paul G.Wilson	*				
Chenopodiaceae	*Sclerolaena parviflora* (R.H.Anderson) A.J.Scott	*				
Chenopodiaceae	*Tecticornia disarticulata* (PaulG.Wilson) K.A.Sheph. & Paul G.Wilson	*				
Chenopodiaceae	*Tecticornia flabelliformis* (Paul G.Wilson) K.A.Sheph. & Paul G.Wilson	*				
Chenopodiaceae	*Tecticornia halocnemoides* (Nees) K.A.Sheph. & Paul G.Wilson	*				
Chenopodiaceae	*Tecticornia pergranulata* (J.M.Black) K.A.Sheph. & Paul G.Wilson subsp. *pergranulata*	*				
Chenopodiaceae	*Tecticornia* sp. Dennys Crossing (K.A. Shepherd & J. English KS 552) pn	*				
Cupressaceae	*Callitris columellaris* F.Muell.	*		*		
Ericaceae	*Leucopogon* sp. Kau Rock (M.A. Burgman 1126) PN	*				
Euphorbiaceae	*Calycopeplus paucifolius* (Klotzsch) Baill.	*	*			
Euphorbiaceae	*Ricinocarpos velutinus* F.Muell	*				
Fabaceae	*Acacia* sp. narrow phyllode (B.R. Maslin 7831)		*	*	*	
Fabaceae	*Acacia coolgardiensis* Maiden	*				
Fabaceae	*Acacia leptopetala* Benth.	*				
Fabaceae	*Acacia ligulata* Benth.	*				

FAMILY	TAXON	FloraBase prior records	BR1	BR2	BR3	Opportunistic record, this survey
Fabaceae	*Acacia* sp. narrow phyllode (B.R. Maslin 7831) PN	*				
Fabaceae	*Acacia tetragonophylla* F.Muell.	*	*			
Fabaceae	*Jacksonia arida* Chappill	*				
Fabaceae	*Senna artimisioides* subsp. *filifolia*			*	*	
Fabaceae	*Senna glutinosa* subsp. *chatelainiana* (Gaudich.) Randell				*	
Frankeniaceae	*Frankenia cinerea /puncata*	*				
Frankeniaceae	*Frankenia cinerea* A.DC.	*				
Frankeniaceae	*Frankenia* sp.	*				
Frankeniaceae	*Frankenia tetrapetala* Labill.	*				
Goodeniaceae	*Scaevola spinescens* R. Br.			*	*	
Goodeniaceae	*Goodenia quasilibera* Carolin	*				
Goodeniaceae	*Velleia rosea* S.Moore	*				
Hemerocallidaceae	*Dianella revoluta* R. Br		*			
Lamiaceae	*Prostanthera semiteres* Conn subsp. *semiteres*	*				
Lamiaceae	*Westringia rigida* R.Br.	*				
Loranthaceae	*Amyema miquelii* (Lehm. ex Miq.) Tiegh		*	*		
Loranthaceae	*Amyema benthamii* (Blakely) Danser		*	*		
Loranthaceae	*Lysiana casuarinae* {Miq.} Tiegh.	*				*
Malvaceae	*Brachychiton gregorii* F.Muell.	*				
Myrtaceae	*Darwinia diosmoides* (DC.) Benth.	*				
Myrtaceae	*Eucalyptus brachycorys* Blakely	*				
Myrtaceae	*Eucalyptus corrugata* Luehm.	*				
Myrtaceae	*Eucalyptus kochii* subsp. *plenissima*			*		
Myrtaceae	*Eucalyptus loxophleba* subsp. *lissophloia*		*			
Myrtaceae	*Eucalyptus petraea* D.J.Carr & S.G.M.Carr	*				*
Myrtaceae	*Eucalyptus salicola* Brooker	*				
Myrtaceae	*Eucalyptus salubris* F.Muell.				*	
Myrtaceae	*Kunzea pulchella* (Lindl).	*				
Myrtaceae	*Leptospermum fastigiatum*		*			
Myrtaceae	*Leptospermum macgillivrayi* Joy Thomps.					*
Myrtaceae	*Melaleuca hamata* Fielding & Gardner					
Myrtaceae	*Melaleuca lateriflora* Benth.	*				
Myrtaceae	*Melaleuca macronychia* Turcz.	*				
Myrtaceae	*Melaleuca vinnula* Craven & Lepschi	*				
Myrtaceae	*Verticordia halophila* A.S.George	*				
Polygalaceae	*Comesperma integerrimum* Endl.	*				

FAMILY	TAXON	FloraBase prior records	BR1	BR2	BR3	Opportunistic record, this survey
Portulacaceae	*Calandrinia granulifera* Benth	*				
Pittosporaceae	*Bursaria occidentalis* E.M.Benn.					*
Pittosporaceae	*Pittosporum angustifolium* Lodd.	*				
Poaceae	*Aristida contorta* F.Muell.	*	*			
Poaceae	*Austrostipa elegantissima* (Labill.) S.W.L.Jacobs & J.Everett		*	*		
Poaceae	*Austrostipa hemipogon* (Benth.) S.W.L.Jacobs & J.Everett	*				
Poaceae	*Austrostipa pycnostachya* (Benth.) S.W.L.Jacobs & J.Everett.				*	
Poaceae	*Austrostipa* sp.	*				
Poaceae	*Austrostipa trichophylla* (Benth.) S.W.L.Jacobs & J.Everett		*			
Poaceae	*Spartochloa scirpoidea* (Steud.) C.E.Hubb.	*				
Proteaceae	*Grevillea levis* Olde & Marriott	*				
Proteaceae	*Grevillea sarissa* S.Moore subsp. *sarissa*	*				
Proteaceae	*Hakea preissii* Meisn.	*				
Proteaceae	*Hakea recurva* Meisn. subsp. *recurva*	*				
Rutaceae	*Phebalium canaliculatum* (F.Muell. & Tate) J.H.Willis	*				
Santalaceae	*Santalum acuminatum* (R.Br.) A.DC.		*			
Santalaceae	*Exocarpos aphyllus* R.Br.			*	*	
Sapindaceae	*Dodonaea viscosa* (DC.) J.G.West subsp. *angustissima* (DC.) J.G.West	*		*		
Scrophulariaceae	*Eremophila decipiens* Ostenf.	*	*			
Scrophulariaceae	*Eremophila drummondii* F.Muell.		*			
Scrophulariaceae	*Eremophila miniata* C.A.Gardner	*				
Scrophulariaceae	*Eremophila oppositifolia* R.Br.	*		*	*	
Scrophulariaceae	*Eremophila scoparia* (R.Br.) F.Muell.				*	
Scrophulariaceae	*Eremophila clarkei* Oldfield & F.Muell.				*	
Scrophulariaceae	*Eremophila ionantha* Diels.				*	
Scrophulariaceae	*Eremophila ?ionantha x scoparia*				*	
Solanaceae	*Solanum hoplopetalum* Bitter & Summerh.			*		
Solanaceae	*Solanum nummularium* S.Moore.		*			

Appendix 2. The lichens of Baladjie Lakes Nature Reserve and Baladjie Rock.

FAMILY	TAXON	Prior records	BR1	BR2	BR3	First record in A W & COOL Bioregions #
Acarosporaceae	*Sarcogyne regularis* Körb.				*	
Candelariaceae	*Candelariella xanthostigmoides* (Müll. Arg.) R.W. Rogers		*			
Cladoniaceae	*Heterodea beaugleholei* Filson				*	
Cladoniaceae	*Heterodea muelleri* (Hampe) Nyl.		*			
Collemataceae	*Collema coccophorum* Tuck.		*			
	Genus sp. (D. Edinger BR1 13b)		*			
	Genus sp. (D. Edinger BR1 17d)		*			
	Genus sp. (D. Edinger BR2 16a)			*		
Lecideaceae	*Lecidea capensis* Zahlbr.		*			*
Parmeliaceae	*Canoparmelia pruinata* (Müll. Arg.) Elix & J. Johnst.			*		
Parmeliaceae	*Flavoparmelia diffractaica* Elix & J. Johnst.			*		
Parmeliaceae	*Flavoparmelia rutidota* (Hook. f. & Taylor) Hale		*		*	
Parmeliaceae	*Imshaugia subarida* (Elix) Elix		*			*
Parmeliaceae	*Parmeliopsis macrospora* (Elix & J.Johnst.) Elix				*	
Parmeliaceae	*Parmeliopsis macrospora* (Elix & J.Johnst.) Elix		*	*		*
Parmeliaceae	*Xanthoparmelia constipata* (Kurok. & Filson) Elix & J. Johnst.	AR Main 1971				
Parmeliaceae	*Xanthoparmelia flindersiana* (Kurok. & Filson) Elix & J. Johnst.	AR Main 1971				
Parmeliaceae	*Xanthoparmelia luteonotata* (J.Steiner) O.Blanco et al					
Parmeliaceae	*Xanthoparmelia reptans* (Kurok.) Elix & J. Johnst.		*	*	*	
Parmeliaceae	*Xanthoparmelia semiviridis* (Nyl.) O.Blanco et al.			*		
Parmeliaceae	*Xanthoparmelia taractica* (Kremp.) Hale		*	*	*	
Parmeliaceae	*Xanthoparmelia terrestris* (Kurok. & Filson) Elix & J. Johnst.		*	*	*	
Parmeliaceae	*Xanthoparmelia verrucella* (Essl.) O.Blanco et al.			*		
Peltulaceae	*Peltula sp. Edinger, D. BR1 4b*		*			
Physciaceae	*Buellia dissa* (Stirt.) Zahlbr.		*			*

FAMILY	TAXON	Prior records	BR1	BR2	BR3	First record in A W & COOL Bioregions #
Physciaceae	*Buellia georgei* Trinkaus, H. Maryrhofer & Elix		*			*
Physciaceae	*Buellia* sp. (D. Edinger BR-3 10A)				*	
Physciaceae	*Buellia* sp. (D. Edinger BR-1 17e)		*			
Psoraceae	*Psora crenata* (Taylor) Reinke		*	*		*
Psoraceae	*Psora crystallifera* (Taylor) Müll. Arg.		*	*	*	
Psoraceae	*Psora decipiens* (Hedw.) Hoffm.			*	*	
Psoraceae	? *Pyrenopsis* sp. (D. Edinger, BRO 3)				*	
Psoraceae	*Pyrenopsis sp. Edinger, D. Coll No: BRO 3*			*		
Siphulaceae	*Siphula coriacea* Nyl.	AR Main 1971	*	*	*	
Teloschistaceae	*Caloplaca kaernefeltii* S.Y.Kondr., Elix & A.Thell				*	
Teloschistaceae	*Caloplaca* sp. (D. Edinger BRO-1)		*			
Teloschistaceae	*Fulgensia cranfieldii* S.Y. Kondr. & Kärnefelt		*			
Teloschistaceae	*Teloschistes sieberianus* (Laurer) Hillmann				*	
Teloschistaceae	*Xanthoria elixii* S.Y.Kondr. & Karnefelt			*		
Thelotremataceae	*Diploschistes conceptionis* Vain				*	
Thelotremataceae	*Diploschistes hensseniae* Lumbsch & Elix		*	*		
Thelotremataceae	*Diploschistes ocellatus* (Vill.) Norman		*	*	*	
Thelotremataceae	*Diploschistes thunbergianus* Lumbsch & Vezda				*	
Verrucariaceae	*Endocarpon aridum* P.M. McCarthy		*	*		*
Verrucariaceae	*Endocarpon simplicatum* (Nyl.) Nyl. var. *simplicatum*				*	

#AW: Avon Wheatbelt IBRA Biogeographical Region; **COOL:** Coolgardie IBRA Biogeographical Region

Appendix 3. The fungi recorded at Baladjie Lakes Nature Reserve and Baladjie Rock, April 2009.

Family	Species	Habitat	Substrate
Coriolaceae	*Gloeophyllum* sp.	Eucalypt woodland	On dead decorticated wood
Coriolaceae	*Pycnoporus coccineus* (Fr.) Bondartsev & Singer	On dead shrubs	*Calycopeplus paucifolius* trunk
Geastraceae	*Geastrum ambiguum* Mont.	Eucalypt/ Acacia woodland	In leaf litter
Geastraceae	*Geastrum austral* Berk.	Eucalypt/ Acacia woodland	In leaf litter and soil
Geastraceae	*Geastrum floriforme* Vittad.	Eucalypt/ Acacia woodland	In soil
Podaxaceae	*Podaxis pistillaris* (L.) Fr.	*Acacia burkittii* shrubland	In soil
Sclerodermataceae	*Pisolithus* sp.	*Eucalyptus petraea* woodland	In soil
Tulostomataceae	*Tulostoma operculatum* Long & S. Ahmad	Eucalypt/ Acacia woodland	In soil
Tulostomataceae	*Tulostoma pulchellum* Sacc.	Eucalypt/ Acacia woodland and *Acacia burkittii* shrubland	In soil
Tulostomataceae	*Tulostoma pygmaeum* Lloyd	Eucalypt/ Acacia woodland	In soil
Tulostomataceae	*Tulostoma reticulatum* G. Cunn.		

Appendix 4. The Myxomycetes recorded in moist chambers from bark collected at Baladjie Lakes Nature Reserve and Baladjie Rock, April 2009 WANATS survey.

Family	Species	Substrate
Arcyriaceae	*Arcyria pausiaca* H.W.Keller & Bub.-Zurey	*Eucalyptus petraea* bark
Arcyriaceae	*Arcyria pomiformis* (Leers) Rostaf.	*Eucalyptus petraea* bark
Stemonitidaceae	*Colloderma oculatum* (C.Lippert) G.Lister	*Acacia burkittii* bark
Physaraceae	*Physarum viride* (Bull.) Pers.	*Eucalyptus petraea* bark
Stemonitidaceae	*Stemonitopsis dictyospora* (Celak) Nann.-Brem.	*Eucalyptus petraea* bark
Trichiaceae	*Trichia contorta* (Ditmar) Rostaf.	*Acacia burkittii* bark

Appendix 5. Birds recorded at Baladjie Rock, Baladjie Lakes Nature Reserve and adjacent to flora quadrats (April, 2009).

Species	BR1	BR2	BR3	Opportunistic records
Australian Owlet-nightjar				*
Australian Raven				*
Australian Ringneck	*	*		
Banded Lapwing				
Black-faced Cuckoo-shrike	*			
Brown Falcon				*
Brown Honeyeater				*
Chestnut-rumped Thornbill				*
Crested Bellbird				*
Galah				*
Grey Shrike-thrush				*
Inland Thornbill				*
Nankeen Kestrel				*
Purple-crowned Lorikeet			*	
Red-capped Robin	*			
Red-tailed Black-Cockatoo				*
Singing Honeyeater	*	*		
Spiny-cheeked Honeyeater		*	*	
Striated Pardalote				*
Wedge-tailed eagle	*			
Weebill				*
White-eared Honeyeater				*
White-winged Triller				*
Willie Wagtail				*
Yellow-plumed Honeyeater			*	